WHITAKER, T.; SOLOV'YEV, S.N. [translator]; SOROKER, V.I., doktor tekhnicheskikh nauk, redaktor; KRUGLOV, S.A., redaktor; GLADKIKH, N.N., tekhredaktor

[Lightweight concrete in the United States. Translated from the English] Legkie betony v SShA. Perevod s angliiskogo S.N.Solov'eva, pod red. V.I.Sorokera. Moskva, Gos. izd-vo lit-ry po stroit. materialam, 1956. 147 p. (MLRA 10:3)
(United States--Lightweight concrete)

SOLOV'YEV, S.N., inzh.

Precast reinforced concrete in the Novosibirsk Economic Region.
Biul. stroi. tekh. 16 no.4:35-36 Ap '59. (MIRA 12:6)

1.Nauchno-issledovatel'skiy institut Stroyinformatsii Akademii stroitel'stva i architektury SSSR.
(Novosibirsk Province--Precast concrete)

LYUTSAU, Aleksey Grigor'yevich; MER, N.I.; MERRO, Ye.M.; RYBIN, N.G.; ROZENVASSER, M.A.; SOLOV'YEV, S.N.; FILIMONOV, V.P.; SHAROYKO, V.V.; MEREZHKO, V.G., retsenzent; USENKO, L.A., tekhn. red.

[On the road of great initiative] Po puti velikogo pochina. Moskva, Transzheldorizdat, 1961. 75 p. (MIRA 15:2)

1. Zamestitel' nachal'nika Glavnogo upravleniya lokomotivnogo khozyaystva Ministerstva putey soobshcheniya (for Merezhko).
(Railroads—Employees—Labor productivity)

SOLOV'YEV, S.N.; TSYAKALO, A.G.

Contrainer for feeding electrode rods into the bunker of an electrode-coating press. Sbor.rats.predl.vnedr.v proizv. no.5:40 '60. (MIRA 14:8)

1. Zavod "Krasnyy Profintern".
(Feed mechanisms)

SOLOV'YEV, S.N., inzhener.

Working out specifications for parts of centrifugal overhung-type pumps on the basis of elements of the theory of dimension diagrams. Trudy VIGM no.13:62-87 '51. (MLRA 10:8)
(Centrifugal pumps--Specifications)

SOLOVYEV, S.N.

USSR/ Miscellaneous - Industrial processes

Card 1/1 Pub. 104 - 6/20

Authors : Solovyev, S. N.

Title : The accuracy balance of diametral dimensions of objects machined by the fine grinding method

Periodical : Stan. i instr. 26/3, 20-21, Mar 1955

Abstract : The error in cutting-tool adjustment is considered to be the main factor causing errors in the dimensions of the objects machined immediately after tool adjustment. The most serious errors were found to be caused by the displacements and deformations in the machine-tool-object system occurring under the effect of the cutting forces. Other factors resulting in errors of objects machined on grinding lathes are listed. Table; drawings; graphs.

Institution : .....

Submitted : .....

SOLOV'YEV, S.N.

Using hard alloy drills. Stan. i instr. 28 no.10:38-39 O '57.
(Drilling and boring machinery) (MLRA 10:11)

USSR/Soil Science, Mineral Fertilizer. I-3

Abs Jour: Referat.Zh.Biol., No. 16, 25 Aug, 1957, 69041

Author : Solovev, S.N.
Inst :
Title : Liming of Acid Soils in Some Countries of the British Empire.

Orig Pub: Udobrenie i urozhai, 1956, No. 5, 59-61.

Abstract: No abstract

Card 1/1

SOLOV'YEV, S.N., kand.yurid.nauk

Capital investments in the chemical industry of the United States.
Opyt stroi. no.30:104-130 '60. (MIRA 13:11)
(United States--Chemical industries)

TITLE: List of scientific research works and symposia of works of TsNIDI completed in 1956. Anon. (Perechen nauchno-issledovatel-skikh rabot i sbornikob trudov TsNIDI zakonchennykh v 1956 godu)

PERIODICAL: "Energomashinostroenie", (Power Machinery Construction), 1957, No. 5, p. 32, (U.S.S.R.)

ABSTRACT: Solov'ev, S.N. Investigations into the parameters of systems for purifying peat and wood generator gas (No. 282).

An investigation was made into the influence of a number of factors on the purification and cooling of the gas (the type of nozzle, the density of sprinkling, the water consumption, etc.) in application to a gas generator type OG-16 working on peat or wood.

Nosov, S.S. Investigation of stresses in parts of the crankshaft/connecting rod mechanism of heavily loaded engines. (No. 293).

The work is devoted to the development and introduction of a procedure for measuring stresses in parts of the crankshaft/connecting rod mechanism and results of measurements of dynamic stresses in these parts are given.

Levin, M.I. Investigation of a system of remote control for the operation of diesel installations (No. 239).

An investigation was made into systems based on available equipment of Soviet manufacture; special devices and systems were developed and investigated which can be used to solve problems of remote control in combination with other tasks in the automation of diesel engines. During the course of the

Romanenko, V.O. Consideration and systematisation of data on the wear of moving parts in diesel engines types Ch8.5/11; Ch10.5/13; Ch12/14; D6; D50; Ch36/45; D and Dr30/50 and 8-DR43/61. (No. 249).

Nikitin, M.D. and Kalinovskiy, O.E. Investigation of wear of piston rings and cylinder linings when running diesel engines at higher than normal speed and pressure (No. 247).

The work demonstrates the possibility of using small relative activity in investigating wear of diesel parts by a radio-active method using a scintillation counter. A method was developed for determining the wear of a diesel engine cylinder liner by a method using radio-active isotopes. A relationship is established between wear of the upper piston rings and the cylinder liner and the r.p.m. and maximum pressure of the cycle for a small four-stroke diesel engine.

Symposium No. 29. "Internal Combustion Engines".

The symposium contains articles describing investigations into the combustion chamber and pistons of engine 1Ch10.5/13; results are given of tests on an experimental engine 1Ch13/16 with a chamber in the piston when working with supercharging. The question of corrosion properties of oils with additives is considered and recommendations are made about oils to be used in diesel engines with lead-bronze bearings.

Symposium No. 30. "Internal Combustion Engines and Gas Generator Installations".

The symposium contains articles describing investigations

work a system of telemeasurements of the conditions of a diesel installation suitable for operation over very great distances was made and investigated.

Volchok, L.Ya. Development of a procedure and apparatus for measuring the speed of pulsating flows of gas (No. 291).

A thermo-anemometer was developed for isometric flows using a tungsten wire 11 microns in diameter and experimental pick-ups were made. A special rig was designed and made for calibrating the thermo-anemometer and investigating the thermal inertia of fine wires. An investigation was made of the thermal inertia of fine wires from 11 to 50 microns in diameter with air flow speeds of 25 - 325 metres/second.

Frolov, F.A. Heat transfer and the hydraulic resistance of oil coolers with wire type turbulators within the tubes (No. 309).

An investigation was made of heat transfer in an oil cooler working on a circuit with oil inside a pipe with a wire turbulator and water outside the pipe. Formulae are given for the relationship between heat transfer and hydraulic resistance in the oil section of the cooler. An outline is given of the design of a new efficient and small oil cooler and results are given of tests on a cooler connected to a supercharged engine for purposes of comparison with design for-

/ulae

SOLOV'YEV, S.N., kand. tekhn.nauk, dotsent

Using the specifications of technological systems in developing the processes of part manufacture. Vest. mashinostr. 45 no.10:46-51 O '65.

(MIRA 18:11)

BAZHBEUK-MELIKOVA, I., kandidat tekhnicheskikh nauk; SOLOV'YEV, S.

Glass blocks--efficient material for use in window apertures. Stroi.mat., izdel. i konstr. 1 no.7:17-19 Jl'55. (MLRA 8:11)

1. Starshii nauchnyy sotrudnik VNIIS (for Bazhbeuk-Melikova)
2. Nauchnyy sotrudnik TSentral'nogo nauchno-issledovatel'skogo instituta promyshlennykh sooruzheniy (for Solov'yev)
(Glass construction)

SOLOV'YEV, S., arkhitektor.

Using rippled glass for covering light openings in roofs.
Stroi. mat. 2 no.11:24-25 N '56. (MLRA 10:2)

(Glass) (Roofing)

SOLOV'YEV, S.P. Cand Tech Sci -- (diss) "Transparent guards made of hollow glass blocks and corrugated glass". Mos,1957. 10 pp 22 cm. (Acad of Construction and Architecture USSR. Sci Res Inst of ~~Architectural~~ Construction Physics and ~~Safety~~ Enclosing Structures) 110 copies (KL, 9-57, 101)

GUSEV, N.M., doktor tekhnicheskikh nauk, professor; SOLOV'YEV, S.P., kandidat tekhnicheskikh nauk.

Using glass and reinforced concrete elements. Stroi. prom. 35 no.5: 27-32 My '57. (MLRA 10:6)

(Glass construction)

SKOBLOV, D.A., inzh., red.; ANDRIYEVSKIY, V.G., kand. tekhn. nauk, red.; SOLOV'YEV, S.P., kand. tekhn. nauk

[Construction specifications and regulations] Stroitel'nye normy i pravila. Moskva, Gosstroiizdat. Pt.1. Sec.V. ch.20. [Articles for filling openings and skylights] Izdeliia dlia zapolneniia proemov i fonarei (SNiP I-V. 20-62). 1963. 6 p. (MIRA 17:3)

1. Russia (1923- U.S.S.R.) Gosudarstvennyy komitet po delam stroitel'stva. 2. Gosstroy SSSR (for Skoblov). 3. Mezhvedomstvennaya komissiya po peresmotru Stroitel'nykh norm i pravil (for Andriyevskiy). 4. TSentral'nyy nauchno-issledovatel'skiy institut eksperimental'nogo proyektirovaniya zhilishcha Akademii stroitel'stva i arkhitektury SSSR (for Solov'yev).

SOLOV'YEV, S.P., kand.tekhn.nauk; DUBOV, E.M., inzh.; KOLMOVSKOY, A.A., inzh.

Hermetic industrial buildings with exterior walls of glass reinforced concrete. Prom. stroi. 41 no.2:9-12 F '64. (MIRA 17:3)

70-3-2-9/26

AUTHORS: Verbitskaya, T.N., Zhdanov, G.S., Venevtsev, Yu.N. and Solov'yev, S.P.

TITLE: Electrical and X-ray Investigations of the System $BaTiO_3$ - $BaZrO_3$ (Elektricheskiye i rentgenograficheskiye issledovaniya sistemy $BaTiO_3$ - $BaZrO_3$)

PERIODICAL: Kristallografiya, 1958, Vol. 3, Nr 2, pp 186 - 196 (USSR).

ABSTRACT: Various solid solutions of $BaTiO_3$ - $BaZrO_3$ were prepared, having up to 30 mol% of the latter, by heating appropriate mixtures of $BaCO_3$, TiO_2 and ZrO_2 at 1 400° ± 10°C. The resulting materials were examined by the Debye-Scherrer method with a camera of diameter 11.4 cm and Cr or Cu radiation. With Cr radiation the lines 310 and 222 occur at a sufficiently high angle to give accurate cell dimensions. (For Cu radiation the appropriate lines are 501 and 431) The significance of the splitting of the lines under the distortions observed is explained. Dimensional measurements were made to ± 0.001 A, monoclinic angle to ± 1.5', rhombohedral angle to ± 1' and axial ratio to ± 0.0005.

Card1/3 For the pure compounds the cell dimensions were found to be:-

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Electrical and X-ray Investigations of the System $BaTiO_3$ - $BaZrO_3$

$BaTiO_3$, a= 3.990, c = 4.027, c/a = 1.0093, V = 64.12; and $BaZrO_3$, a = 4.186 and V = 73.35 . From 0 to 2 mol% of zirconate the dimensions of the tetragonal phase approached each other slightly. From 2 to 6.5% the solid solution was pseudo-monoclinic with a = c and the monoclinic angle decreasing from 90° 08.5' to 90°04.0' . From 6.5 to 20 mol%, the solution was rhombohedral with the rhombohedral angle equal to 89°57' and increasing from 4.0177 to 4.0440. Above 20% the solution was cubic with an increasing from 4.0447 to 4.0616 at 30%. Over the whole range the volume of the unit cell increased linearly from 64.12 to 67.00 A^3 with no breaks at the phase transitions. In pure $BaTiO_3$ three phase transitions (all with hysteresis) are observed on changing its temperature. They are at 120°, 0-5° and -70 to -80 °C. These transition points were measured for a range of compositions. Below 10% zirconate all four phases occur at appropriate temperatures, between 10 and 15% there is a confused region and above 15% only the cubic and rhombohedral phases occur. Measurements were also made of the dielectric constant of the material at various temperatures

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70-3-2-9/26

Electrical and X-ray Investigations of the System $BaTiO_3$ - $BaZrO_3$

and compositions.
The phase diagram constructed is like that found for $BaTiO_3$ - $BaSnO_3$ by Smolenskiy and Isupov (DAN, 1954, Vol 96, 53) and not like that drawn up by Kell and Hellicar (Akustika, 1956, Vol 6, Nr 2, p 232).
There are 8 figures, 2 tables and 26 references, 10 of which are Soviet, 2 German and 14 English.

ASSOCIATION: Fiziko-khimicheskiy institut im. L.Ya. Karpova (Karpov Physico-chemical Institute) and NII MRTP

SUBMITTED: July 18, 1957

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SOV/70-3-4-11/26

AUTHORS: Venevtsev, Yu.N., Zhdanov, G.S., Solov'yev, S.P. and Zubov, Yu.A.

TITLE: The Internal Fields in Certain Ferro-electrics with Structures of the Perovskite Type (Vnutrenniye polya v nekotorykh segnetoelektrikakh so strukturoy tipa perovskita)

PERIODICAL: Kristallografiya, 1958, Vol 3, Nr 4, pp 473-479 (USSR)

ABSTRACT: An analysis of the methods of calculating the internal field in ferro-electrics of the perovskite type is made. The internal fields and the spontaneous polarisation in the tetragonal modifications of $BaTiO_3$ and $PbTiO_3$ are calculated and the influence of certain cation parameters on these quantities is estimated. The structure was assumed, as a first approximation, to be built up of point charges and point dipoles. Kozlovskiy's method (Zh.Tekh. Fiz., Vol 21, Nr 11, p 1388, 1951) where the five different ions are attached to five separate sub-lattices was used. In $BaTiO_3$ the Ba ion was taken as the origin but in the $PbTiO_3$ the Ti in view of the reported displacements (Shirane, Pepinsky and Danner, Acta Crystall, 1956, Vol 9, p 131). Published polarisabilities were used.

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As the effective ionic charges were not known, a coefficient of charging $\gamma(0 \leqslant \gamma \leqslant 1)$, identical for all ions, was introduced. If for $BaTiO_3$ γ was taken as 1, then the calculated, spontaneous polarisation was twice the observed value. The value $\gamma = 1/2$ was therefore used for both $BaTiO_3$ and $PbTiO_3$. The spontaneous polarisation when calculated was then near to the observed value and the internal fields were found to be $BaTiO_3$: Ba, 0.04; Ti, 4.84; O_I, 3.66; O_{II} and O_{III}, 0.55. $PbTiO_3$: Pb, 1.83; Ti, 8.62; O_I = 7.02; O_{II} and O_{III}, 2.23: in each case X 10^8 V/cm. As the calculations were carried out with structure coefficients C_{ik} appropriate to a cubic structure, the approximation will be much better in the case of $BaTiO_3$ with c/a=1.01 than for $PbTiO_3$ with c/a = 1.06. The calculations were repeated with

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The Internal Fields in Certain Ferro-electrics with Structures of the Perovskite Type

variations in certain of the parameters. For $BaTiO_3$ a was varied 4.2 and to 3.9 Å; α (polarisability) of the Ti was doubled and halved; the charge distribution was tried as $Ba^{+1/2}$, $Ti^{+2.5}$; the polarisability α_{Ba} of the Ba ions was doubled and halved. Similar variations were made for $PbTiO_3$. The relative influences of the various contributory effects were then apparent. The effects on the spontaneous polarisation were also found. The results are compared with those of other authors. There are 3 tables and 33 references, 13 of which are Soviet, 15 English and 5 German.

ASSOCIATION: Fiziko-khimicheskiy institut im. L.Ya. Karpova (Institute of Physical Chemistry imeni L. Ya. Karpov)

SUBMITTED: July 18, 1957.

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24(7), 24(3)

AUTHORS: Venevtsev, Yu. N., Zhdanov, G. S., Solov'yev, S. P. SOV/48-22-12-17/33

TITLE: Effect of Various Factors Upon the Curie Temperature of Piezoelectrics With the Structure of the Perovskite Type (Vliyaniye razlichnykh faktorov na temperaturu Kyuri segnetoelektrikov so strukturoy tipa perovskita)

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1958, Vol 22, Nr 12, pp 1476-1482 (USSR).

ABSTRACT: The question concerning the Curie (Kyuri) T_k temperature of piezoelectrics having a perovskite structure, was already investigated earlier (Refs 1-7 and 8-11). The analysis of these papers shows that there is no uniform opinion on this problem. The conclusions drawn from references 1-7 are based on the assumption that in the investigated piezo- and anti-piezoelectrics the cations of the B-type are piezoactive. Actually, in some piezoelectrics the B-cations and in others the A-cations are piezoactive (Refs 8, 9, 13). As it was already stated (Ref 10), the results given in references 1-7 must be subjected to further examinations, because of the reason mentioned above. The classification of the piezo- and anti-piezoelectrics with perovskite structure depending on the

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type of the piezoactive cation , as proposed in references 8, 9, 13 promotes the solution of the problem discussed. Therefore, they have been investigated again in this paper. It was attempted to explain the differences of the Curie temperature in piezoelectrics with perovskite structure in the same way, by using only such characteristics as polarizability, charges and radii. The degree of covalence of the bindings in the respective compounds was neglected. The authors started from an approximate theoretical estimation. They used the results from references 15, 16, determined in the investigation of the effect of various parameters of cations upon the internal field of piezoelectrics with perovskite structure. The conclusions drawn on the basis of theoretical estimations agree with the few experimental results obtained by the authors of this article and Sawaguchi (Ref 7). As soon as new experimental data will be obtained it will be possible to check also the theoretical results still improved.

Effect of Various Factors Upon the Curie Temperature of Piezoelectrics With the Structure of the Perovskite Type SOV/48-22-12-17/33

There are 2 tables and 26 references, 12 of which are Soviet.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova
(Physico-Chemical Institute imeni L. Ya. Karpov)

Card 3/3

ZHDANOV, G. S.; SOLOV'YEV, Sergey Pavlovich; VESNOVSKIY, Yuriy Nikolayevich; IVANOVA, V. V.

"Internal Fields in the Orthorombic Modification of Barium Titanate"

a report presented at Symposium of the International Union of Crystallography Leningrad, 21-27 May 1959

AUTHORS: Venevtsev, Yu.N., Zhdanov, G.S., Solov'yev, S.P. and Ivanova, V.V. SOV/70-4-2-26/36

TITLE: On Internal Fields in Ferroelectric $PbTiO_3$ (O vnutrennikh polyakh v segnetoelektrike $PbTiO_3$)

PERIODICAL: Kristallografiya, 1959, Vol 4, Nr 2, pp 255-257 (USSR)

ABSTRACT: Calculations of the internal fields in $PbTiO_3$ crystals have been made by the Madelung-Hagedorn method (R. Hagedorn - Ref 3) which is more accurate than Kozlovskiy's method used before, according to the work of Yu.N. Venevtsev et al (Ref 1). These fields E_i are Pb 1.4, Ti 6.9. O_I 6.1 and O_{II}, O_{III} 1.8 x 10^8 V/cm . The contributions of the separate ions to the spontaneous polarisation of 81 x 10^{-6} coulomb/cm^2 are tabulated. The internal fields for model crystals of the $PbTiO_3$ type but with ions of different polarisability are similarly calculated. For $BaTiO_3$ the calculations by both methods

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On Internal Fields in Ferroelectric $PbTiO_3$

are in good quantitative agreement. Graphical examination of the parameters affecting the internal fields show their relative importance. In order they are: 1) lattice period; 2) charge on the ferroelectric cation; 3) polarisability of the ions of the oxygen octahedra; 4) polarisability of the ferroelectric cation; 5) polarisability of the non-ferroelectric cation. There are 1 figure, 2 tables and 5 references, 4 of which are Soviet and 1 German.

ASSOCIATION: Fiziko-khimicheskiy institut im. L.Ya. Karpova (Physical-Chemical Institute im. L. Ya. Karpov)

SUBMITTED: November 14, 1958

SOV/70-4-4-17/34

AUTHORS: Venevtsev, Yu.N., Solov'yev, S.P. and Zhdanov, G.S.

TITLE: On the Structural Coefficients of the Internal Field in Ferroelectrics of the Perovskite Type

PERIODICAL: Kristallografiya, 1959, Vol 4, Nr 4, pp 575-578 (USSR)

ABSTRACT: The notation is carried over from an article by the same authors (Ref 1). The values of the projection of the structural coefficients $S_l(x,y,z) \equiv C_{ik}$ for different orientations (cube edges, face or body diagonals) of the dipoles in a cubic perovskite-type cell are tabulated in terms of P and Q . (P = - 15.04102 and Q = 4.33387). The coefficients C_{ik} are dimensionless and numerically equal to the field strength, additional to the Lorentz field, due to the sub-lattice of unit dipoles of the k-th sort of ion and acting on the i-th sort of ion. The derivation of expressions such as :

$$S_2(0, 1/2, 1/2) = S_3(0, 1/2, 1/2) = Q/\sqrt{3}$$

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On the Structural Coefficients of the Internal Field in Ferroelectrics of the Perovskite Type

$$S_2(1/2, 0, 0) = S_3(1/2, 0, 0) = P/\sqrt{3}$$

is given but all the other values are tabulated.

There are 1 table and 1 Soviet reference.

ASSOCIATION: Fiziko-khimicheskiy institut im. L.Ya. Karpova (Physico-chemical Institute imeni L. Ya. Karpov)

SUBMITTED: June 23, 1958

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24.2800, 24.7700

77108
SOV/70-4-6-9/31

AUTHORS: Zhdanov, G. S., Solov'yev, S. P., Venevtsev, Yu. N., Ivanova, V. V.

TITLE: Internal Fields in the Orthorhombic Modification of $BaTiO_3$

PERIODICAL: Kristallografiya, 1959, Vol 4, N 6, pp 855-861 (USSR)

ABSTRACT: Internal fields in orthorhombic (pseudomonoclinic) barium titanate are computed according to ionic-displacement data reported in Phys. Rev., 105, 3, 856, 1957. Computations are based on the assumption that point ionic charges are displaced parallel to the edges of monoclinic unit cells, twice as small as orthorhombic cells, and are superposed by the similarly displaced point dipole moments. The latter's magnitude is determined as the product of ionic polarization and the affecting internal field. The known equation:

$$E_x = p_x \sum{}' \frac{2x_i^2 - y_i^2 - z_i^2}{(x_i^2 + y_i^2 + z_i^2)^{5/2}} + p_y \sum{}' \frac{3x_i y_i}{(x_i^2 + y_i^2 + z_i^2)^{5/2}} + p_z \sum{}' \frac{3x_i z_i}{(x_i^2 + y_i^2 + z_i^2)^{5/2}}$$

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that defines the field along the X axis in terms of equal dipoles p and coordinates x_1, y_1, z_1 of l-th dipole, is reduced, substituting the three sums, for the sake of briefness, by h_{xx}, h_{xy}, h_{xz}. In cubic and tetragonal $BaTiO_3$, h_{xy}, h_{xz}, h_{yz}, are equal to zero. Using various calculation methods the authors proved that h_{xy} in "monoclinic" $BaTiO_3$ is vanishingly small relative to h_{xx} and can be disregarded, while h_{xx} remains about the same as in cubic $BaTiO_3$. Thus dipole moments p_k for each projection upon l(x,z) axis become defined by:

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$$\sum_{k=1}^{5} (\delta_{ik} - (h_{ll})_{ik}) \frac{p_k \cos \varphi_{kl}}{v} = \sum_{k=1}^{5} \frac{e_k}{a^3} (f_l)_{ik}$$

where k = 1,2 ... 5 is number of unlike atoms in the unit cell; e_k is charge of a k-type ion; a and c are edgelengths of monoclinic cells; $(f_l)_{ik}$ is structure factor whose magnitude equals the field intensity affecting l-th atom in the sublattice formed by k-type atoms; φ_{kl} is angle between l axis and k-type dipole;

$$\delta_{ik} = \begin{cases} 0 & \text{for } k \neq i \\ \frac{1}{a_i} & \text{for } k = i; \end{cases}$$

Spontaneous polarization is computed according to:

$$P_{s_l} = \sum_{k=1}^{k} \frac{P_k \cos \varphi_{kl}}{v} + \sum_{k=1}^{k} \frac{e_k \cdot s_{kl}}{v}$$

where s_{kl} denotes displacement of k-type atoms along l axis. The computed values (Table 2) are about the same as in tetragonal $BaTiO_3$. The computed spontaneous polarization proved to be equal to the experimental one. Ti atoms are subjected to the highest field intensity and Ba atoms to the lowest. The fields affecting both atoms and oxygen O_{II} are parallel to the polar axis and to the displacements of the respective atoms, while the fields affecting O_I and O_{III} are symmetrically inclined to the polar axis; they are under 29^0 to the displacement directions, and $9^030'$ to X and Z axes.

Internal Fields in the Orthorhombic Modification of $BaTiO_3$

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TABLE

ION	$E_i \cdot 10^{-6}$, v/cm			$P_s = 3.1 \cdot 10^{-6}$ k/cm^2, $P_{s_x} = -2.2 \cdot 10^{-6}$ k/cm^2, $P_{s_z} = 2.2 \cdot 10^{-6}$ k/cm^2					
				$\frac{(P_{i\,el} + P_{i\,ion}) \cdot 100\,\%}{P_s}$		$\frac{P_{i\,el} \cdot 100\,\%}{P_s}$		$\frac{P_{i\,ii} \cdot 100\,\%}{P_s}$	
	E_x	E_z	$\lvert E \rvert$	x	z	x	z	x	z
Ba	−0,08	0,08	0,12	− 1,3	1,3	−1,3	1,3	0	0
Ti	−3,60	3,60	5,09	−15,0	15,7	−5,3	5,3	−9,7	9,7
O_I	−0,44	2,62	2,66	−12,3	57,1	−8,3	40,9	−4,1	7,2
O_{II}	−0,47	0,47	0,67	−13,8	13,8	−9,0	9,0	−4,8	4,8
O_{III}	−2,62	0,44	2,66	− 57,1	12,3	−40,9	8,3	−7,2	4,0

Assistance of the late G. I. Skanavi is acknowledged.
There are 3 figures; 3 tables; and 11 references, 4 U.S., 3 Soviet, 2 German, 2 Danish. The U.S. references are: G. Shirane, H. Danner, R. Pepinsky, Phys, Ref., 105, 3, 856, 1957; J. C. Slater, Phys. Rev., 78, 748, 1950; S. Triebwasser, J. Phys. Chem. Solids, 3, 1/2, 53, 1957; H. H. Wieder, Phys. Rev., 99, 1161, 1955.

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Internal Fields in the Orthorhombic Modification of $BaTiO_3$

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SOV/70-4-6-9/31

ASSOCIATION: Physicochemical Institute imeni L. Ya. Karpov (Fiziko-khimicheskiy institut imeni L. Ya. Karpova)

SUBMITTED: September 16, 1959

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SOLOV'YEV, V. I., Cand Phys-Math Sci -- (diss) "Crystallochemical investigation of antiseignettoelectrical material with the perovskite structure." Moscow, 1960. 12 pp; (Academy of Sciences USSR, Inst of Crystallography); 150 copies; price not given; list of author's works on pp 11-12; (KL, 51-60, 116)

GOL'DE., G.A. [translator]; DUDAREV, V.Ya.[translator]; SOLOV'YEV, S.P.[translator]; ZHDANOV, G.S., red.; LAGIN, S.I., red.; BELEVA, M.A., tekhn. red.

[Annihilation of positrons in solids] Annigiliatsiia pozitronov v tverdykh telakh; sbornik statei. Moskva, Izd-vo inostr. lit-ry, 1960. 228 p. (MIRA 15:3)
(Positrons)

82509

S/070/60/005/004/009/012
E132/E360

24 7800

AUTHORS: Venevtsev, Yu.N., Zhdanov, G.S., Solov'yev, S.P., Bezus, Ye.V., Ivanova, V.V., Fedulov, S.A. and Kapyshev, A.G.

TITLE: Crystal Chemical Investigations of Substances with the Perovskite Type of Structure Which Has Special Dielectric Properties

PERIODICAL: Kristallografiya. 1960, Vol. 5, No. 4. pp 620 - 626

TEXT: In $BaTiO_3$ the dielectrically-active ion is the Ti but in $PbTiO_3$ it is the Pb ion. The $(Pb.Ba)TiO_3$ system may, therefore, be expected to show peculiarities where these two effects interact. The variation in structure, dielectric and piezoelectric properties is not continuous from one end-member to the other. Experimentally, solid solutions with 7, 9, 11, 14 and 24 wt. % $PbTiO_3$ showed anomalies not explicable as due to loss of PbO. $NaNbO_3$ undergoes several phase transitions in a short temperature interval. Dielectric and optical observations give transitions at 560, 470, 520 and 640 °C. X-ray data contradict all but the first of these. Polycrystalline material was

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Crystal Chemical Investigations of Substances with the Perovskite Type of Structure Which Has Special Dielectric Properties

studied by X-ray methods up to 700 °C and transitions at 360, 430, 470, 520 and 640 °C were found. Below 360 °C $NaNbNO_3$ is monoclinic with $a \neq c \neq b$ and $\beta > 90°C$. Above 360 °C it is monoclinic with $a = c \neq b$ and $\beta > 90$ °C (true symmetry orthorhombic). The transition from orthorhombic to tetragonal is not at 360 but at 430 °C. The X-ray method is no less sensitive than the optical and dielectric methods. 4

From an examination of solid solutions $BaTiO_3$ - $(Ca,Sr)(Zr,Sn)O_3$, it is concluded that, other things being equal, the Curie temperature of perovskite-type ferroelectrics is higher, the smaller is the period of the lattice and the higher is the polarisability of the active cation.

$BiTiO_3$ with added $Bi_2O_3 \cdot Cr_2O_3$ and $Bi_2O_3 \cdot Al_2O_3$ has been synthesised and specimens showed properties like those found in $BaTiO_3$ containing $Bi_4Ti_3O_{12}$.

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Crystal Chemical Investigations of Substances with the Perovskite Type of Structure Which Has Special Dielectric Properties

$BiFeO_3$ and specimens in the system $PbTiO_3$-$BiFeO_3$ have been synthesised. The former has a rhombohedral distortion (a = 3.963 Å, $\alpha = 89^{\circ}24'$) and a susceptibility about 80. At 200 °C the susceptibility has a maximum of about 1200. In the solid solution up to 70% by wt. of $BiFeO_3$ there is also a tetragonal modification. The Curie point of $BiFeO_3$ appears to be higher than that of $PbTiO_3$.

General methods for calculating the internal field have been developed for structures of any dipole configurations. These have been applied to the orthorhombic structure of $CaTiO_3$. Here, the internal electric field is zero at the Ti sites. There are 29 references: 2 Japanese (in English), 8 English, 2 international, 1 Swiss, 1 German and 15 Soviet.

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Crystal Chemical Investigations of Substances with the Perovskite Type of Structure Which Has Special Dielectric Properties

ASSOCIATION: Fiziko-khimicheskiy institut
im. L. Ya. Karpova
(Physico-Chemical Institute imeni
L.Ya. Karpov)

SUBMITTED: February 23, 1960

Card 4/4

S/070/60/005/005/006/017
E132/E360

AUTHORS: Solov'yev, S.P., Venevtsev, Yu.N. and Zhdanov, G.S.

TITLE: On a Method of Calculating the Internal Fields in Complex Dipole Structures

PERIODICAL: Kristallografiya, 1960, Vol. 5, No. 5, pp. 718 - 725

TEXT: A method is proposed for calculating the internal field in complex dipole structure. In general, the problem comes down to the solution of a system of linear equations with $3m$ unknowns, where m is the number of atoms in the elementary cell. If the symmetry of the structure is taken into account the number can be decreased to $3n$ where n is the number of complexes and where n is less than m. Ewald's method can be successfully applied to calculating all the structure sums necessary for estimating the fields. The method is generally applicable in all cases where the structure has been determined. The calculation of the structure sums enables the idealisation of the structure to be avoided as these sums can be calculated in any case. Sometimes, however, in spite of the methods

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On a Method of Calculating the Internal Fields in Complex Dipole Structures

available for reducing the tediousness of the calculation of the fields in real structures, the number of unknowns may be too big to enable the system of equations obtained to be solved by hand methods. This raises no difficulty as modern computing machines can deal with such systems of equations with extreme speed. In fact, the systematic calculation of the fields in real antiferroelectric crystals and in other structures is best done by a machine appropriately programmed.
There are 1 figure and 14 references: 5 Soviet, 1 Swiss, 5 English and 3 German.

ASSOCIATION: Fiziko-khimicheskiy institut imeni L.Ya. Karpova (Physics-chemical Institute imeni L. Ya. Karpov)

SUBMITTED: March 1, 1960

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24.7800 (1142, 1144, 1162)

84996

S/048/60/024/010/005/033
B013/B063

AUTHORS: Solov'yev, S. P., Venevtsev, Yu. N., Zhdanov, G. S., and Ivanova, V. V.

TITLE: Method of Calculating Inner Electric Fields in Complicated Dipole Structures and Their Application to $CaTiO_3$

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1960, Vol. 24, No. 10, pp. 1191 - 1194

TEXT: A general method is suggested for calculating the inner electric fields in complicated structures, in which there may take place both parallel and antiparallel ionic displacements in an arbitrary direction. This method, which was applied to the calculation of fields in $CaTiO_3$ type crystals, constitutes a generalization of the methods that are used for calculating the fields in piezoelectric substances of an ABO_3-type structure, and proceeds from the respective structure model of the compound concerned. A total of six different cases were examined. The calculation was made at the vychislitel'nyy tsentr MGU (Computer

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84996

Method of Calculating Inner Electric Fields in Complicated Dipole Structures and Their Application to $CaTiO_3$

S/048/60/024/010/005/033
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Center of MGU) with the computer "Стрела" (Strela). The calculation of the fields in $CaTiO_3$ shows that the distribution of fields in this compound depends only little on the polarizability of Ca ions. It is all the more dependent, however, on the effective ion charge, up to the change of the signs of the fields acting upon the oxygen ions, although the qualitative picture remains unchanged. The fields acting upon Ca ions are only little varied in this connection. In all of the six cases examined the fields are considerably smaller than is the case with the piezoelectric ABO_3 compounds. In this case, as may be seen from the structure symmetry, the field acting upon the Ti ions is exactly vanishing. In $BaTiO_3$ and $PbTiO_3$ (Refs. 8 and 9), on the contrary, fields of maximum strength act upon the Ti ions. The basic difference between the fields in $CaTiO_3$ and in the piezoelectric ABO_3 compounds related to it, is connected with the fact that in the latter the octahedra are greatly deformed, while they are nearly ideal in $CaTiO_3$. The relationship

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Method of Calculating Inner Electric Fields in Complicated Dipole Structures and Their Application to $CaTiO_3$

S/048/60/024/010/005/033
B013/B063

between the anomaly of dielectric properties and the deformation of BO_6 octahedra can be also observed in the case of such ABO_3 compounds as are, e.g., $PbZrO_3$, $PbHfO_3$, $KaNbO_3$. It can be stated that the presence of a deformation of B - O is an indispensable prerequisite for an antipiezoelectric phase transition. The authors thank N. P. Trifonov, collaborator of the computer center of MGU for his assistance in the computations. The present paper was read at the Third Conference on Piezoelectricity, which took place in Moscow from January 25 to 30, 1960. There are 1 figure and 12 references: 4 Soviet.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physicochemical Institute imeni L. Ya. Karpov)

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30

S/070/61/006/001/002/011
E032/E314

2.2181 (2303, 1144)
24.7800 (1142, 1385, 1136)

AUTHORS: Solov'yev, S.P., Venevtsev, Yu.N., Zhdanov, G.S. and Ivanova, V.V.

TITLE: Calculation of Internal Electric Fields in Perovskite Crystals ($CaTiO_3$)

PERIODICAL: Kristallografiya, 1961, Vol. 6, No. 1, pp. 78 - 85

TEXT: In a previous paper (Ref. 13) the present authors gave an account of a general method for the calculation of internal fields in structures having an arbitrary dispostion of dipoles. The aim of the present paper is to apply this method to the calculation of fields in the antiferro-electric dipole structure of $CaTiO_3$, using a model based on the real structure reported by Kay and Baily in Ref. 14. In the method described by the present authors in Ref. 13, it is assumed that the polarisabilities and effective ion charges are known. The polarisabilities of Ca and O ions were taken from the book by Kittel' (Ref. 15) ($\alpha_{Ca} = 1.1 \cdot 10^{-24}$ cm^3,

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Calculation of Internal Electric Fields ....

$\alpha_O = 2,4 \times 10^{-24} cm^3$) . It is further assumed that the effective charges of the ions in $BaTiO_3$ are approximately equal to one-half of the total ion charges. In order to estimate the effect of the assumed magnitude of the charges and polarisabilities on the field distribution six different variants of the calculation were carried out, in which the charges and polarisabilities were varied within reasonable limits. The results obtained are summarised in Table 3, which gives the internal fields in $CaTiO_3$. The first five variants are based on the real structure of $CaTiO_3$, shown in Fig. 2. For comparison, variant 6 is based on values of the f and h sums calculated for undispersed positions of the ions. All the calculations were carried out on the electronic computer "Strela" at the Computation Centre of MGU.

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E032/E314

Calculation of Internal Electric Fields ....

Acknowledgments are expressed to N.P. Trifonov and A. Tel'nova of the Computation Centre of MGU, who carried out the numerical calculation on the "Strela" computer.
There are 2 figures, 3 tables and 17 references: 7 Soviet and 10 non-Soviet.

ASSOCIATION: Fizikokhimicheskiy institut im. L.Ya.Karpova
(Physicochemical Institute im. L.Ya. Karpov)

SUBMITTED: March 1, 1960

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20024

S/070/61/006/001/002/011
E032/E314

Calculation of Internal Electric ....

Table 3: 1 - Variants; 2 - $E \cdot 10^{-8}$, V/cm; 3 - Projection Axis; CGSE = esu

$E \cdot 10^{-8}$ в/см 2	Ось проекций 3	Варианты 1	2	3	4	5	6
		1	2	3	4	5	6
		^{40}Ca: $e_{Ca} = 1,0$; $e_{Ti} = 2,0$; $e_O = -1,0$	^{42}Ca: $e_{Ca} = 1,0$; $e_{Ti} = 2,0$; $e_O = -1,0$	^{48}Ca: $e_{Ca} = 0,5$; $e_{Ti} = 2,5$; $e_O = -1,0$	^{48}Ca: $e = e_{Ti} = 1,5$; $e_O = -1,0$	$^{48}Ca = 1,1 \cdot 10^{-24}$ г; $e_O = 2,4 \cdot 10^{-24}$ г; $e_{Ca} = 1,0$ CGSE; $e_{Ti} = 2,0$ CGSE; $e_O = -1$ CGSE	esu
E_{Ca}	X	−0,0708	−0,136	−0,0972	−0,0720	−0,0840	−0,0072
	Y	0	0	0	0	0	0
	Z	0,494	0,751	0,517	0,601	0,557	0,422
E_{Ti}	X	0	0	0	0	0	0
	Y	0	0	0	0	0	0
	Z	0	0	0	0	0	0
E_{O_I}	X	0,767*	0,876*	2,053*	−0,477	0,792*	0,856*
	Y	0	0	0	0	0	0
	Y	0,0215	0,302	−0,499*	0,680	0,0906	−0,0714*
$E_{O_{II}}$	X	0,470*	0,546*	0,928*	0,0578*	0,489*	0,544*
	Y	−0,875	−0,892	−1,887	0,134*	−0,880	−0,942
	Z	−0,0066	−0,085	−0,570	0,519	−0,0258	−0,520

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S/61/000/001/002/013
E032/E314

Calculation of Internal Electric Fields .....

Fig. 2:

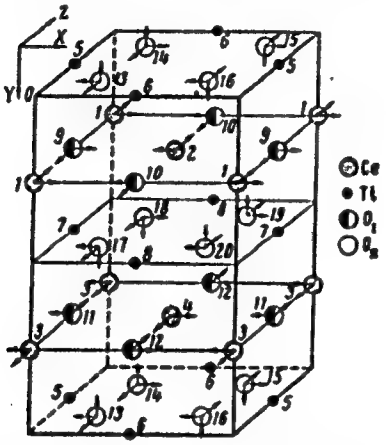

Рис. 2. Элементарная ячейка $CaTiO_3$.

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SOLOV'YEV, S.P.; [redacted], ZHDANOV, G.S.

X-ray diffraction study of phase transitions in $NaNbO_3$. Kristallografiia 6 no.2:218-224 Mr-Ap '61. (MIRA 14:9)

1. Fiziko-khimicheskiy institut im. L.Ya.Karpova.
(Sodium niobate) (X rays--Diffraction)

VENEVTSEV, Yu.N.; SOLOV'YEV, S.P.; ZHDANOV, G.S.

Methods for the X-ray diffraction study of small deformations of cubic primary cells. Zav.lab. 27 no.9:1112-1115 '61. (MIRA 14:9)

1. Nauchno-issledovatel'skiy fiziko-khimicheskiy institut imeni L.Ya. Karpova.

(Electric batteries) (X ray--Diffraction)

S/181/62/004/012/027/052
B125/B102

AUTHORS: Lyubimov, V. N., Venevtsev, Yu. N., Solov'yev, S. P., Zhdanov, G. S., and Bakushinskiy, A. B.

TITLE: The dipole structure and the internal electric fields in $PbZrO_3$

PERIODICAL: Fizika tverdogo tela, v. 4, no. 12, 1962, 3543-3550

TEXT: The most probable values of the internal electric fields and field-induced electron dipoles are calculated for a $PbZrO_3$ crystal on the basis of the model of point dipole structure. Using the method developed by S. P. Solov'yev, Yu. N. Venevtsev, G. S. Zhdanov (Kristallografiya 3, 473, 1958), the determination of the 28 different projections of the electron dipole moments was reduced to the solution of a system of 28 linear algebraic equations for 28 unknowns. The structural sums which are necessary for the set-up of these equations describe the fields of the infinite sublattices of the unit charges and unit dipoles, the number of which exceeds by far 1000. Both the structural sums and the system of

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The dipole structure and the ...

equations itself were calculated in various modifications using the electronic computer "Strela". The effect of all structure sublattices on each of the 40 atoms incorporated in the elementary cell was taken into account. The variant P_S was determined by extrapolation for the parameters $e_{Pb} = 1.27$, $e_{Zr} = 1.73$, $e_O = -1$, $\alpha_{Pb} = 4.32 \cdot 10^{-24}$ cm^3, $\alpha_{Zr} = 0.80 \cdot 10^{-24}$ cm^3, $\alpha_O = 2.26 \cdot 10^{-24}$ cm^3. e_i denotes the effective charges and α_i denotes the electron polarizabilities of the ions. The small value of P_S within a certain temperature interval makes it possible to establish a correlation between the data obtained from structure and those from dielectric studies. At room temperature, the ion polarization for the above-mentioned values of the parameters is compensated by electron polarization. Hence, the $PbZrO_3$ crystal is antipolarized and very similar to an anti-electret. Results, similar in principle, are obtained for any of the ten crystallographic polar classes of pyroelectrics (electrets). It is assumed that at least the direction of most of the projections of the electron dipole moments and of the internal fields corresponds to the

S/181/62/004/012/027/052
B125/B102

The dipole structure and the ...

real structures of $PbZrO_3$ at room temperature. The displacement of the atoms may be attributed to nonelectrostatic forces. The highest field strength acts on the Zr ion. In general the internal field strength increases with decreasing ion polarizability. The rules found for $PbZrO_3$ resemble those governing the ferroelectric crystals $BaTiO_3$ and $PbTiO_3$. It would be useful to investigate $PbZrO_3$ under pressure. There are 7 tables.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova, Moskva
(Physicochemical Institute imeni L. Ya. Karpov, Moscow)

SUBMITTED: July 9, 1962

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SOLOVYEV, S. P.; LYUBIMOV, V. N.; VENEVTSEV, Yu. N.; ZHDANOV, G. S.

"The calculations of the internal electric fields and electric-field gradients in the perovskite-type compounds with special dielectric properties."

report submitted for 6th Gen Assembly, Intl Union of Crystallography, Rome, 9 Sep 63.

Karpov Inst of Physical Chemistry, Moscow.

VENEVTSEV, Yu. N., LYUBIMOV, V. N. , SOLOV'YEV, S. P., Viskov, A. S. and ZHDANOV, G. S.

"Calculation of Internal Electric Fields and Field Gradients in Perovskite Type Compounds with Special Dielectric Properties."

report presented at the Symposium on Ferroelectricity and Ferromagnetism, Leningrad, 30 May - 5 June 1963.

SOLOV'YEV, S. P.

"The calculations of the internal electric fields and electric-field gradients in the perovskite-type compounds with special dielectric properties."

report presented at the Symposium on Phase Transitions in Solids, 6th General Assembly, Intl. Union of Crystallography, Rome, Italy, 16-18 Sept 1963.

(Karpov Institute of Physical Chemistry, Moscow, USSR)

ACCESSION NR: AP4030634 S/0048/64/028/004/0630/0635

AUTHOR: Venevtsev,Yu.N.; Lyubimov,V.N.; Solov'yev,S.P.; Zhdanov,G.S.

TITLE: Calculation of the internal electric fields and their gradients in perovskite compounds with distinctive dielectric properties /Report, Symposium on Ferromagnetism and Ferroelectricity held in Leningrad 30 May to 5 June 1963/

SOURCE: AN SSSR. Izv.Ser.fiz., v.28, no.4, 1964, 630-635

TOPIC TAGS: internal field , crystal internal field , perovskite structure, ferroelectricity, ionic ferroelectricity model, ferroelectric compound

ABSTRACT: For a number of years the authors have been engaged in calculating the internal electric fields in compounds having the perovskite structure and peculiar dielectric properties. The methods of calculation and the results have been reported in a series of papers appearing in Kristallografiy (Crystallography) and Fizika tverdogo tela (Solid State Physics) from 1958 to 1962. The results of these calculations are discussed in the present paper. The calculations were based on the ionic model of a crystal with known or assumed structure. The charges and polarizabilities of the point ions were treated as given quantities, but the induced dipole moments

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were calculated. Calculations were performed for several values of the charge, polarizability, and radius of the ions; reasonable variations of these parameters did not alter the qualitative picture of the fields in the six compounds investigated (lead, barium, calcium and cadmium titanates, sodium tantalate, and lead zirconate). Good agreement was obtained between observed and calculated values of the spontaneous polarization with the value 0.5 for the ionic charge factor. The results of the calculations indicate that $NaTaO_3$ and $CdTiO_3$ are ferrielectric materials and that $PbZrO_3$ is a ferrielectric material with nearly antiferroelectric properties. The internal field at the position of the Ti ion was found to vanish in $CaTiO_3$ but to be large in $BaTiO_3$ and $PbTiO_3$. This difference in the fields accounts for the different dielectric behavior of these materials. Because of the strong field at the Ti ion, the conclusion of H.D.Megaw (Acta crystallogr.,5,739,1952; Ibid.,7,187,1954) that the principal factor in ferroelectric transitions of ABO_3 type materials must be a sharp increase in the covalent character of the B-O bond is regarded as inadequately grounded. It is concluded that further theoretical and experimental investigation of the possibilities of the ionic model is desirable, and improved calculations of field gradients are promised for the near future. Orig.art.has: 1 table.

KAPYSHEV, A.G.; VENEVTSEV, Yu.N.; SOLOV'YEV, S.P.; GORBUNOV, L.A.; ZHDANOV, G.S.

X-ray chambers for high-temperature studies. Zav. lab. 30 no.10: 1274-1276 '64. (MIRA 18:4)

1. Nauchno-issledovatel'skiy fiziko-khimicheskiy institut imeni Karpova.

SOLOV'YEV, S.P.; DOLIVO-DOBROVOL'SKIY, V.V.

Report on the activity of the Mineralogical Society of the U.S.S.R. for 1964. Zap. Vses. min. ob-va. 94 no.4:486-495 '65. (MIRA 18:9)

1. Vitse-prezident Vsesoyuznogo mineralogicheskogo obshchestva (for Solov'yev). 2. Uchenyy sekretar' Vsesoyuznogo mineralogicheskogo obshchestva (for Dolivo-Dobrovol'skiy).

SOLOV'YEV, V.A., prof.; SHERBAKOVSKIY, I.I., prof.

Boris Mikhailovich Kupletskii, 1894-1965, an obituary.
Zap.Vses.min.ob-va 94 no.5:620-621 '65. (MIRA 18:12)

1. Pochetnyye chleny Vsesoyuznogo mineralogicheskogo obshchestva.

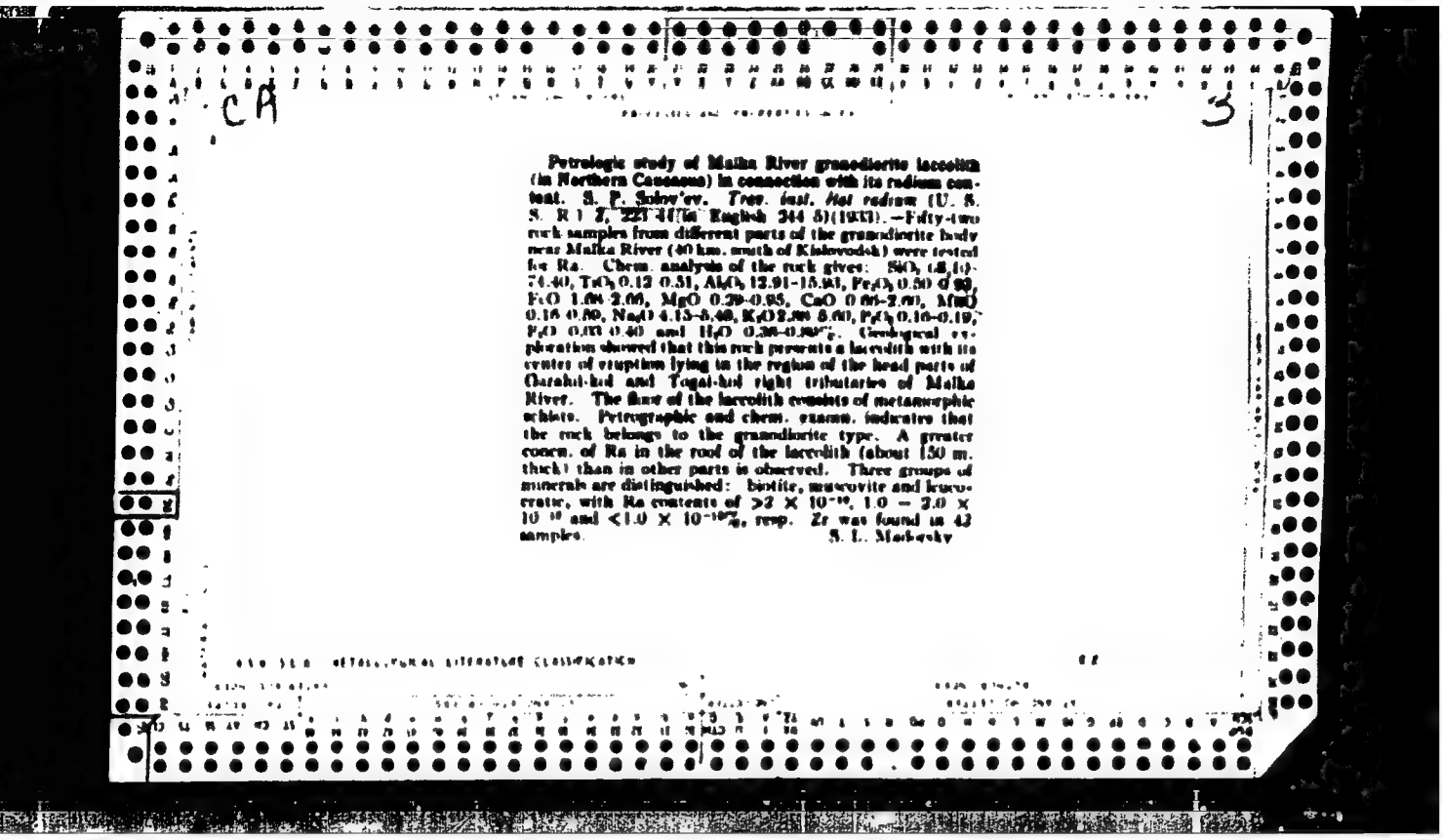
SOLOV'YEV, S.P., prof.

Main chemical characteristics of basic igneous rocks in the U.S.S.R. Zap. Vses. min. ob-va 94 no.6:625-641 '65. (MIRA 18:12)

1. Deystvitel'nyy chlen Vsesoyuznogo mineralogicheskogo obshchestva.

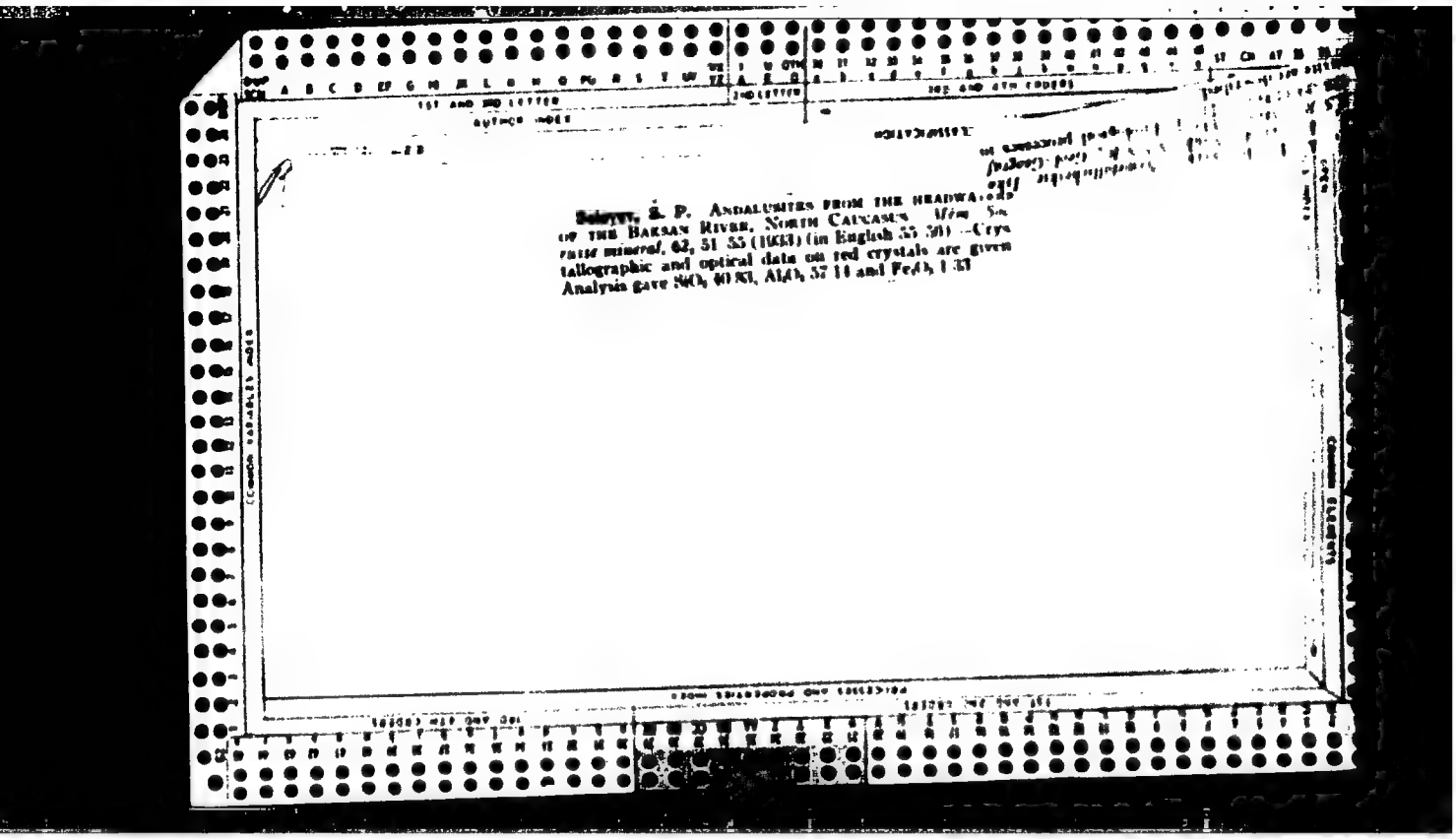
VELIKOSLAVINSKIY, L.A.; YELISEYEV, N.A.; MIKHAYLOV, D.A.; SOLOV'YEV, S.P.

Sergei Vladimirovich Obruchev, 1891-1965; obituary. Zap. Vses. min. ob-va 94 no.6:735-736 '65. (MIRA 18:12)

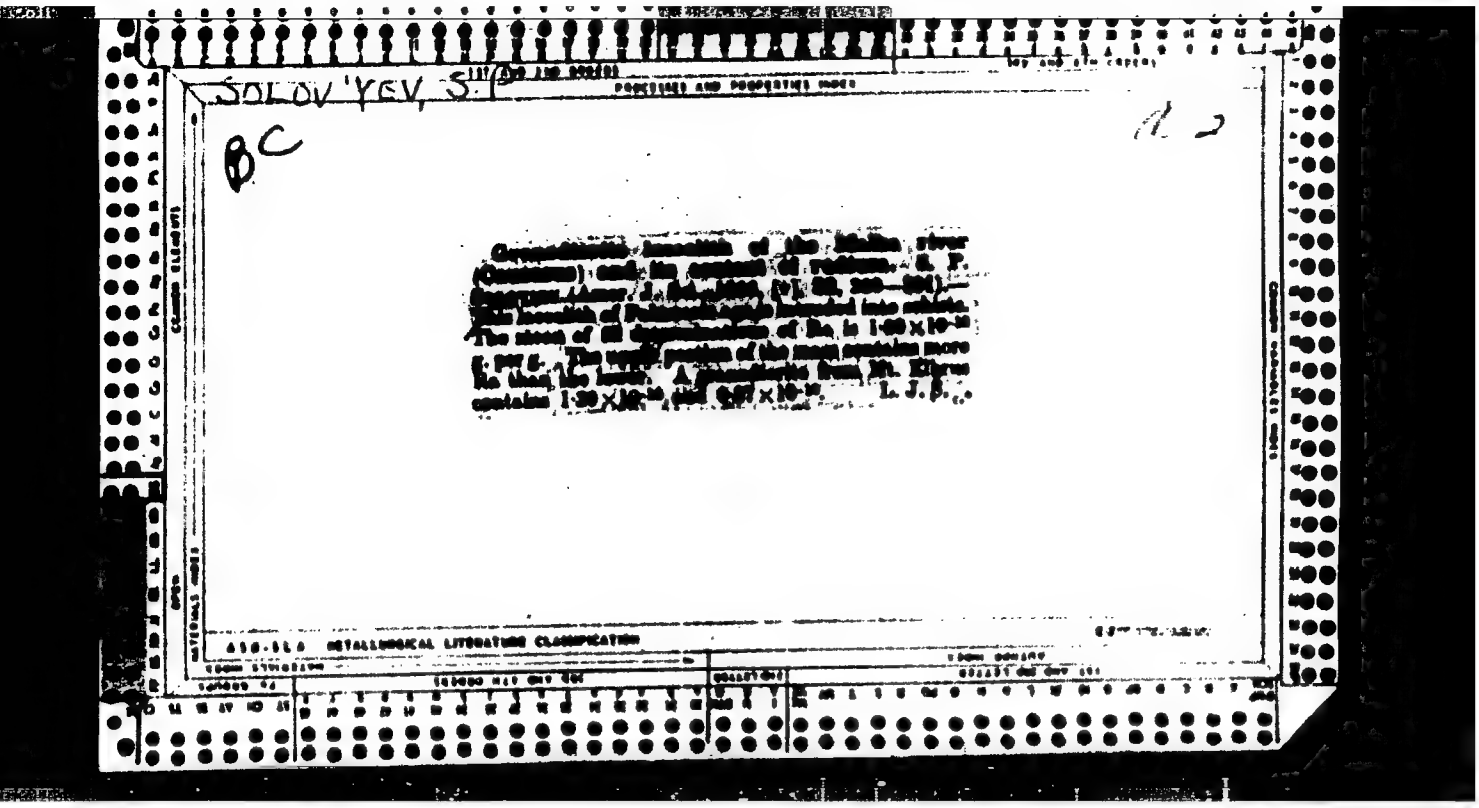


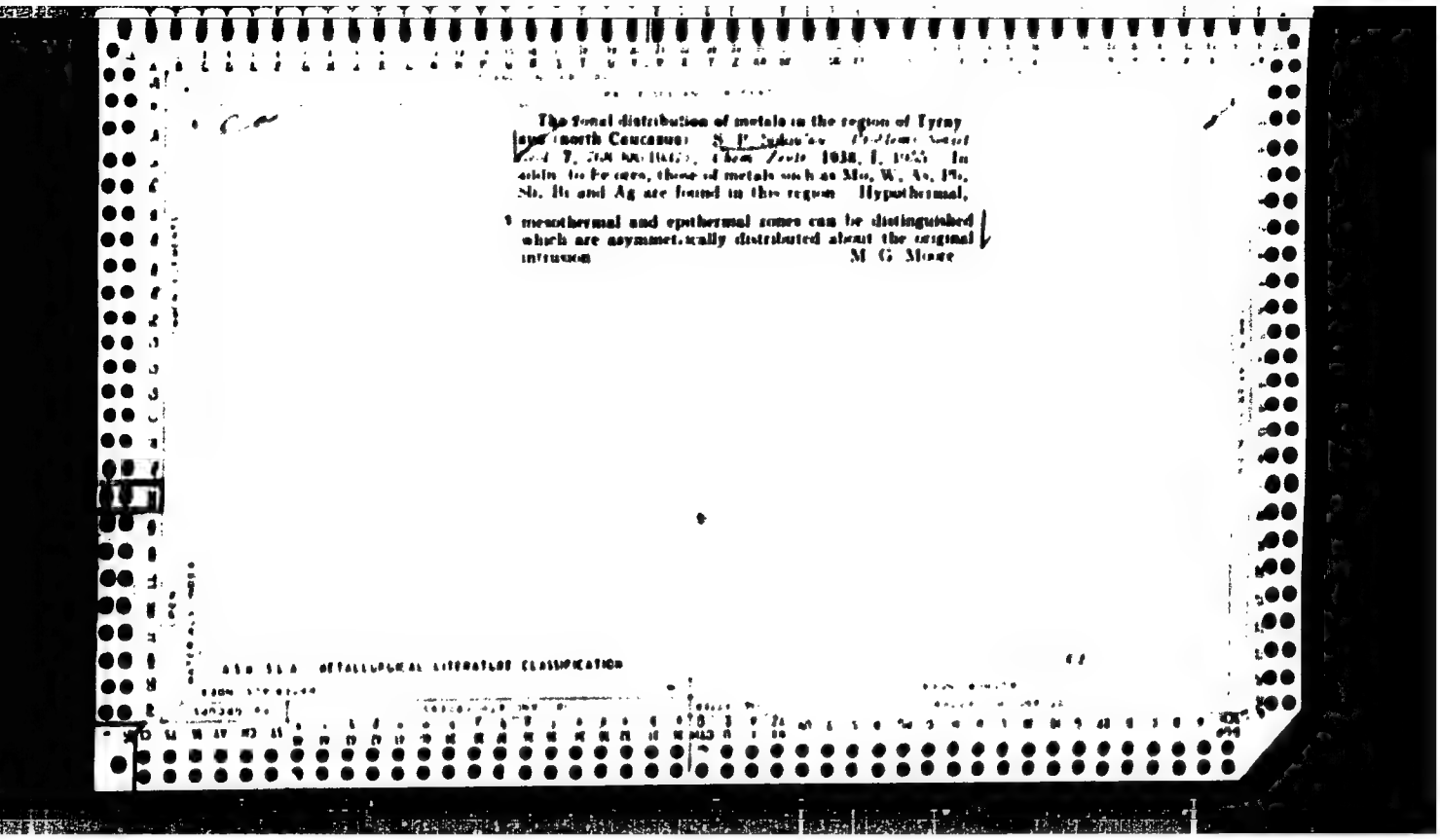
Petrologic study of Malka River granodiorite laccolith (in Northern Caucasus) in connection with its radium content. S. P. Solov'ev. *Trav. Inst. Rad radium* (U. S. S. R.) 7, 221-41(In English 244-5)(1933).—Fifty-two rock samples from different parts of the granodiorite body near Malka River (60 km. south of Kislovodsk) were tested for Ra. Chem. analysis of the rock gives: SiO_2 68.10-74.40, TiO_2 0.12-0.51, Al_2O_3 12.91-15.93, Fe_2O_3 0.50-2.90, FeO 1.08-2.06, MgO 0.29-0.95, CaO 0.66-2.00, MnO 0.16-0.80, Na_2O 4.15-5.40, K_2O 2.80-5.00, P_2O_5 0.10-0.19, P_2O 0.00-0.40 and H_2O 0.36-0.80%. Geological exploration showed that this rock presents a laccolith with its center of eruption lying in the region of the head parts of Garahil-kol and Togal-kol right tributaries of Malka River. The floor of the laccolith consists of metamorphic schists. Petrographic and chem. exams. indicate that the rock belongs to the granodiorite type. A greater concn. of Ra in the roof of the laccolith (about 150 m. thick) than in other parts is observed. Three groups of minerals are distinguished: biotite, muscovite and leucocratic, with Ra contents of $>2 \times 10^{-10}$, $1.0 - 2.0 \times 10^{-10}$ and $<1.0 \times 10^{-10}$%, resp. Zr was found in 43 samples.

S. L. Mosheshy



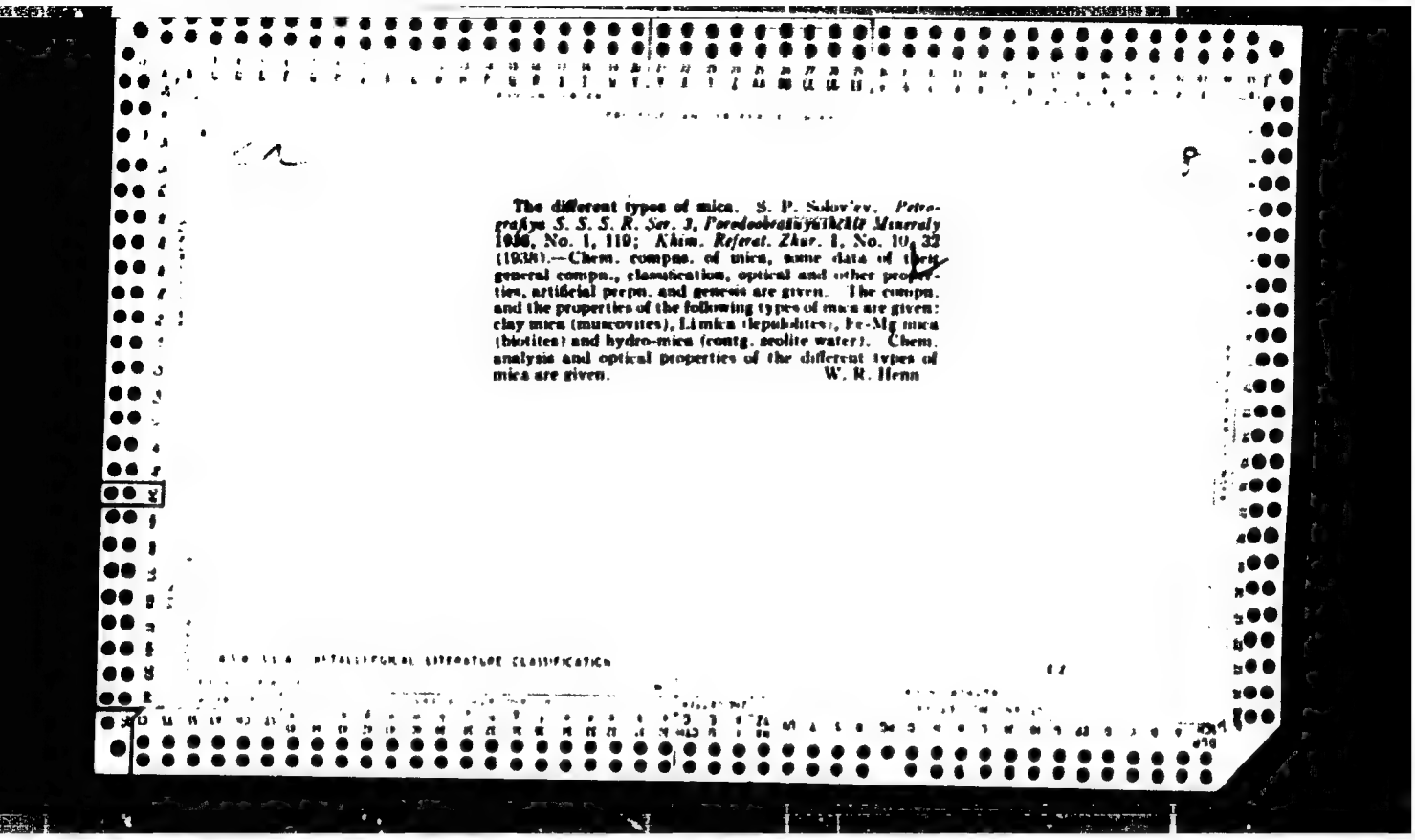
Belyaev, S. P. Andalusites from the headwaters of the Barsan River, North Caucasus. *Min. Sb.* [Lvov. geol. obshch.] *mineral.* 62, 51–55 (1953) (in English 55–56). —Crystallographic and optical data on red crystals are given. Analysis gave SiO_2 40.83, Al_2O_3 57.14 and Fe_2O_3 1.33.





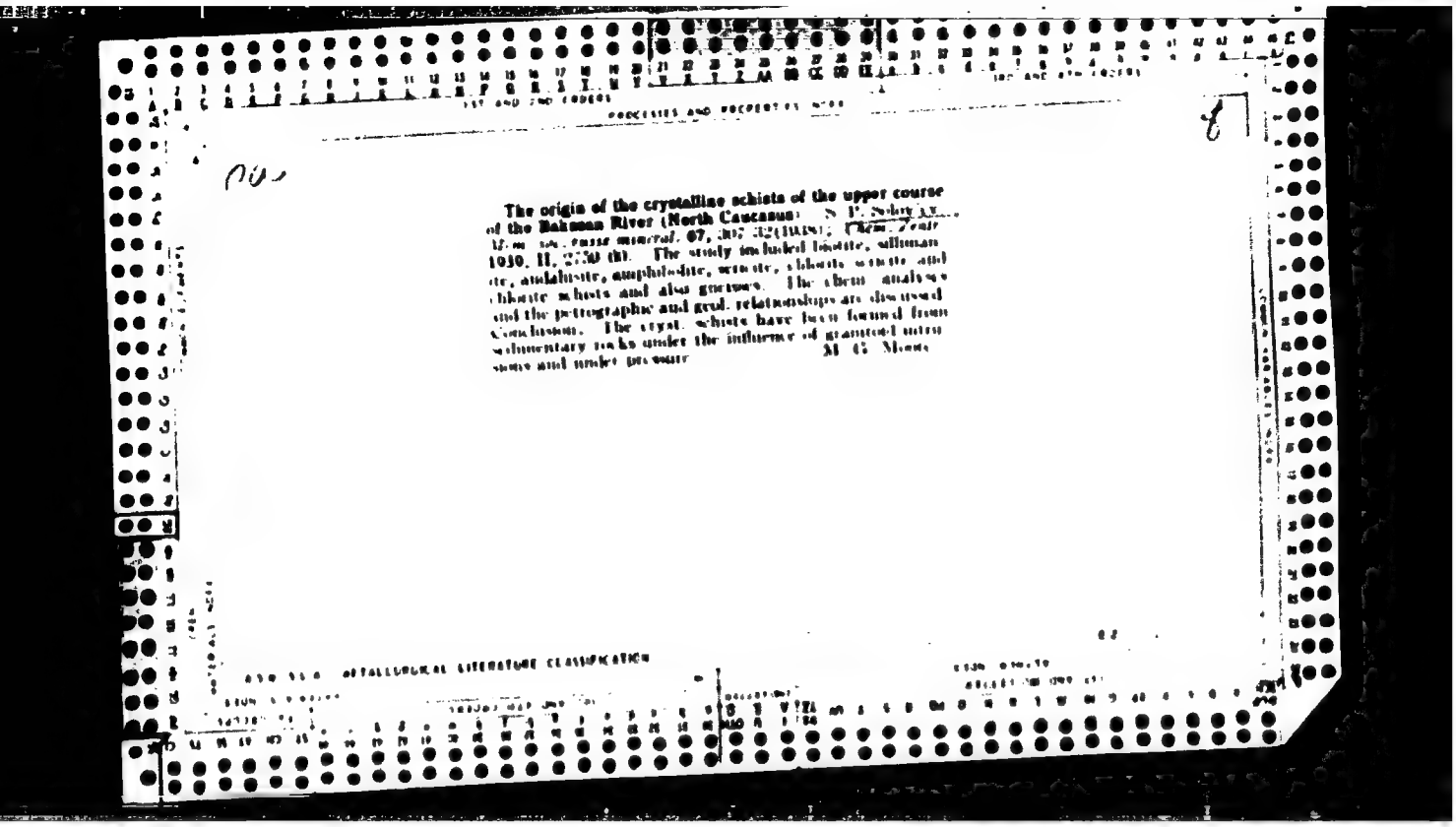
The zonal distribution of metals in the region of Tyrny
[illegible] (North Caucasus) S. P. [illegible] [illegible]
[illegible] 1938, [illegible] In
addn. to Fe ores, those of metals such as Mo, W, As, Pb,
Sb, Bi and Ag are found in this region. Hypothermal,
mesothermal and epithermal zones can be distinguished
which are asymmetrically distributed about the original
intrusion. M. G. Moore

USSR METALLOGENIC LITERATURE CLASSIFICATION



The different types of mica. S. P. Sobolev. *Petrografiya S. S. S. R. Ser. 3, Porodoobrazuyushchii Mineraly* 1936, No. 1, 119; *Khim. Referat. Zhur.* 1, No. 10, 32 (1938).—Chem. compns. of mica, some data of their general compn., classification, optical and other properties, artificial prepn. and genesis are given. The compn. and the properties of the following types of mica are given: clay mica (muscovites), Li-mica (lepidolites), Fe-Mg mica (biotites) and hydro-mica (contg. zeolite water). Chem. analysis and optical properties of the different types of mica are given.

W. R. Henn



The origin of the crystalline schists of the upper course of the Bakhman River (North Caucasus) S. P. Sobry [illegible]. Chem. Zentr. 1930. II, 2250 (in). The study included biotite, silliman ite, andalusite, amphibolite, wernite, chlorite schists and chlorite schists and also gneisses. The chem. analyses and the petrographic and geol. relationships are discussed. Conclusion. The cryst. schists have been formed from sedimentary rocks under the influence of granitoid intru sions and under pressure. M. G. Moses

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

The anomalous garnets of the Tyrna-auza region and their transformations into an isotropic state on heating. S. P. Solov'ev and Kh. S. Nikogosyan. *Mem. soc. russe minéral.* Ser. 2, 67, 631-41(1938); *Khim. Referat. Zhur.* 1939, No. 4, 20.—The rocks of the Tyrna-auza ore-contg. region of Northern Caucasus contained besides the ordinary (isotropic) garnets other anomalous K-Fe-alumina garnets which possessed well defined double-refracting properties. These garnets have an intermediate place between andradite and grossularite according to their compn. A thermal investigation of the anomalous garnets showed that they lose their double-refracting properties at 750-850°.

W. R. Henn

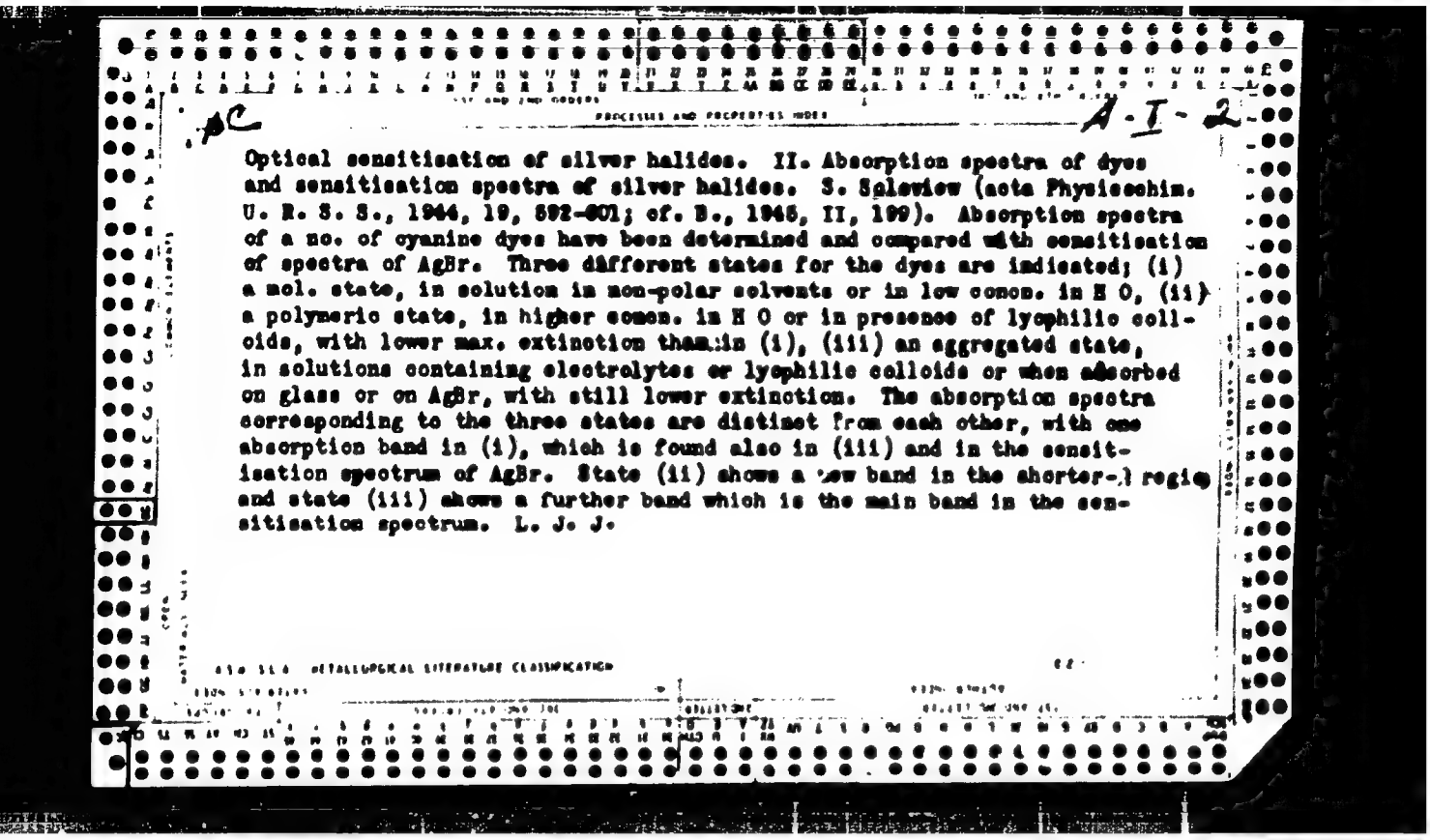
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

First discovery of tellurium minerals in the Caucasus. S. P. Solov'ev, N. A. Gululev and B. Rovna. *Bul. acad. sci. U.R.S.S., Ser. geol.* **1939**, No. 5, 168-71 (in English, 171).—Microscopic study of an ore sample found in the North Caucasus on the basin of the river Baksan revealed Bi with inclusions of Te and also apparently some tellurium bismuthite. Chem. investigation showed Bi and Te and only insignificant amts. of As and Au. This discovery is the first in the Caucasus. B. Z. Kamich

A. C. S.

Geology

Alkali feldspars of the ancient and recent intrusions of Kabardino-Balkaria and some problems connected with them. S. P. Solov'ev. *Zapiski Vsesoyuz. Mineral. Obshchestva*, 69 [2-3] 260-16 (1940); *Khim. Referat. Zhur.*, 4 [4] 38 (1941).—The alkali feldspar intrusions of this region, varying in the time and depth of their solidification, differ from each other optically. The feldspars of the earlier intrusions, solidified at a greater depth, have a very large 2*V* (often exceeding 80°), a clear triclinic character, and a clear microcline lattice, i.e., they are microclines (microcline perthite). The feldspars of the recent porphyry-like granites have a moderate 2*V* (approximately 50°) and pseudomonoclinic optical orientation and belong to the potassium anorthoclases. The recent extruded rocks of the dellenite-liparite variety have a 2*V* approximately 30° and belong to sanidine or potassium anorthoclase. A chemical investigation of the feldspars indicates the predominance of the potassium molecule also in anorthoclases. X-ray diagrams show the similarity of their crystalline structure and very small differences in the intensity of the lines of a Debye diagram. M. Ho.

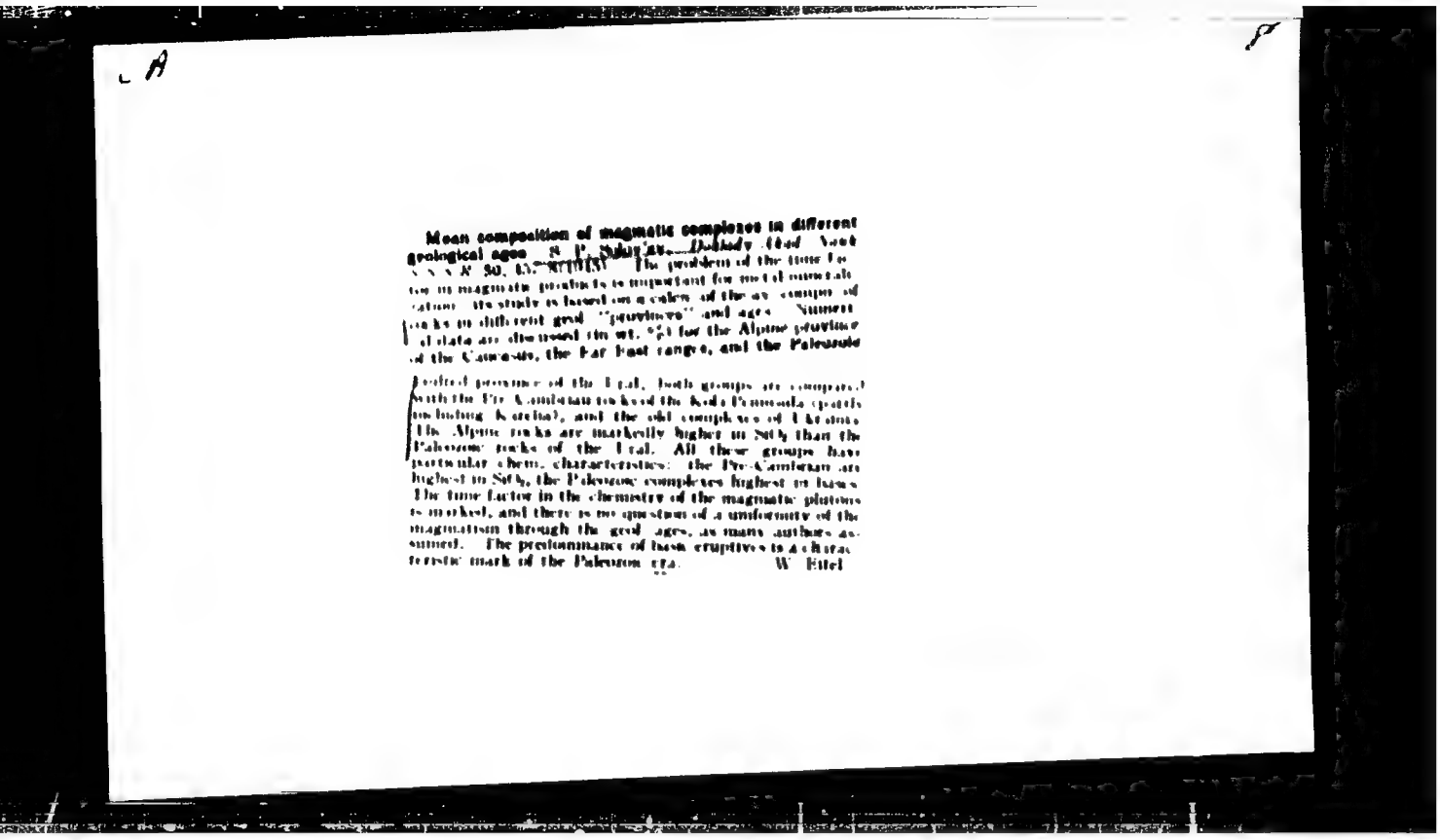


PROCESSES AND PROPERTIES INDEX

A-I-2

Optical sensitisation of silver halides. II. Absorption spectra of dyes and sensitisation spectra of silver halides. S. Soloviow (acta Physicochim. U. R. S. S., 1944, 19, 592-601; cf. B., 1945, II, 199). Absorption spectra of a no. of cyanine dyes have been determined and compared with sensitisation of spectra of AgBr. Three different states for the dyes are indicated; (i) a mol. state, in solution in non-polar solvents or in low concn. in H_2O, (ii) a polymeric state, in higher concn. in H_2O or in presence of lyophilic colloids, with lower max. extinction than in (i), (iii) an aggregated state, in solutions containing electrolytes or lyophilic colloids or when adsorbed on glass or on AgBr, with still lower extinction. The absorption spectra corresponding to the three states are distinct from each other, with one absorption band in (i), which is found also in (iii) and in the sensitisation spectrum of AgBr. State (ii) shows a new band in the shorter-λ region and state (iii) shows a further band which is the main band in the sensitisation spectrum. L. J. J.

METALLURGICAL LITERATURE CLASSIFICATION



Mean composition of magmatic complexes in different geological ages S. P. Suluyan. *Doklady Akad. Nauk S.S.S.R.* 80, 65–68(1951). The problem of the time factor in magmatic genesis is important for metallogenic considerations. The study is based on a calcn. of the av. compns. of rocks in different geol. "provinces" and ages. Numerical data are discussed in wt. % for the Alpine province of the Caucasus, the Far East range, and the Paleozoic platform part of the Ural. Both groups are compared with the Pre-Cambrian rocks of the Kola Peninsula (partly including Karelia), and the old complexes of Ukraine. The Alpine rocks are markedly higher in SiO_2 than the Paleozoic rocks of the Ural. All three groups have particular chem. characteristics: the Pre-Cambrian are highest in SiO_2, the Paleozoic complexes highest in basics. The time factor in the chemistry of the magmatic platforms is marked, and there is no question of a uniformity of the magmatism through the geol. ages, as many authors assumed. The predominance of basic eruptives is a characteristic mark of the Paleozoic era. W. Eitel

SOLOV'YEV, S.P.

Petrographic legacy of V.N. Lodochnikov. Mat. VSEGEI Ob. ser. no.8: 136-139 '48. (MIRA 11:4)
(Petrology) (Lodochnikov, Vladimir Nikitovich, 1887-1942)

SOLOV'IEV, S.P.

Characteristics of skarns of the southern Maritime Territory (Far East). Mat. VSEGEI Ob. ser. no.8:113-118 '48. (MIRA 11:4)
(Maritime Territory--Skarns)

SOLOV'YEV, S. P.

USSR/Academy of Sciences
Minerals

Apr/May/Jun 48

"Report on the Activity of the All-Union Mineralogical Society in 1947," S. P. Solov'yev, Acting Mem, Secy, All-Union Mineralogical Soc, 4 pp

"Zapiski V-S Mineral Obshch" Vol LXXVII, No 2

Gives deaths and new members of society, chronological account of scientific and research efforts of society, names of authors with articles they published, notice of reorganization of All-Russian Mineralogical Society with transfer of its records to jurisdiction of Academy of Sciences.

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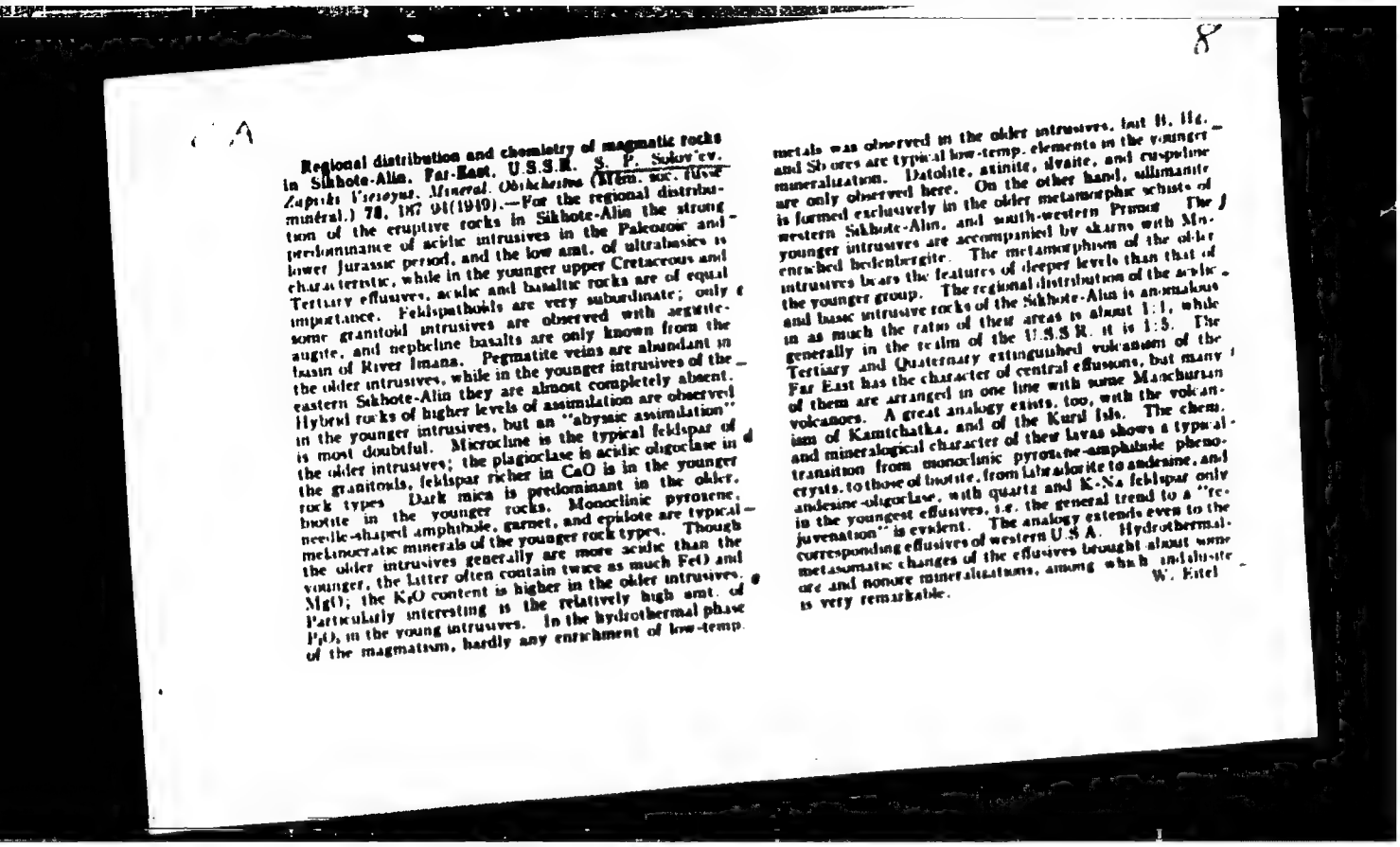


8

A

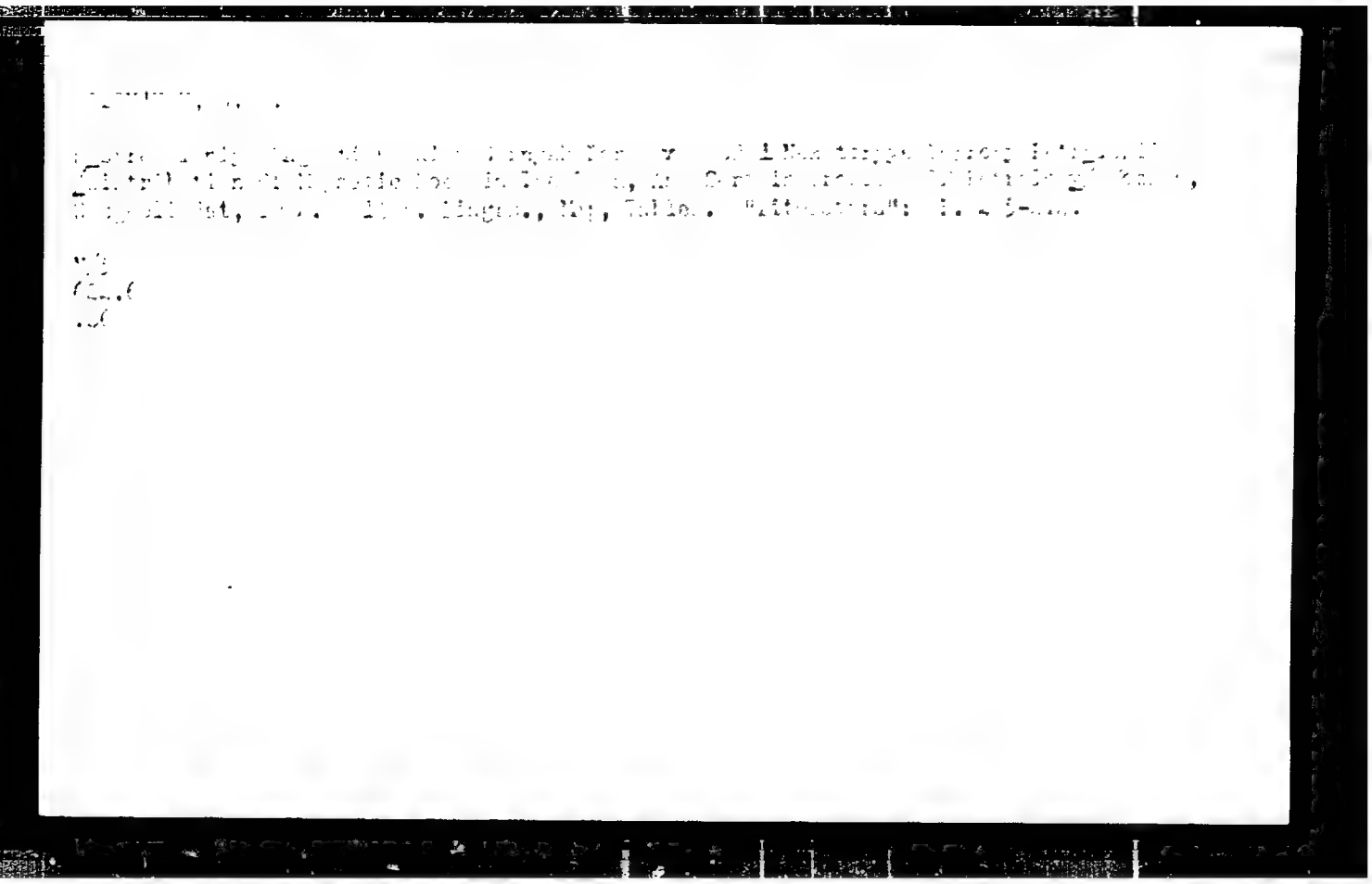
Regional distribution and chemistry of magmatic rocks in Sikhote-Alin, Far-East, U.S.S.R. S. P. Solov'ev. *Zapiski Vsesoyuz. Mineral. Obshchestva* (Mem. soc. Russ. mineral.) **78**, 187-91(1949).—For the regional distribution of the eruptive rocks in Sikhote-Alin the strong predominance of acidic intrusives in the Paleozoic and lower Jurassic period, and the low amt. of ultrabasics is characteristic, while in the younger upper Cretaceous and Tertiary effusives, acidic and basaltic rocks are of equal importance. Feldspathoids are very subordinate; only some granitoid intrusives are observed with aegirite-augite, and nepheline basalts are only known from the basin of River Imana. Pegmatite veins are abundant in the older intrusives, while in the younger intrusives of the eastern Sikhote-Alin they are almost completely absent. Hybrid rocks of higher levels of assimilation are observed in the younger intrusives, but an "abyssic assimilation" is most doubtful. Microcline is the typical feldspar of the older intrusives; the plagioclase is acidic oligoclase in the granitoids, feldspar richer in CaO is in the younger rock types. Dark mica is predominant in the older, biotite in the younger rocks. Monoclinic pyroxene, needle-shaped amphibole, garnet, and epidote are typical melanocratic minerals of the younger rock types. Though the older intrusives generally are more acidic than the younger, the latter often contain twice as much FeO and MgO; the K_2O content is higher in the older intrusives. Particularly interesting is the relatively high amt. of P_2O_5 in the young intrusives. In the hydrothermal phase of the magmatism, hardly any enrichment of low-temp. metals was observed in the older intrusives, but Hg, Sb and Sb ores are typical low-temp. elements in the younger mineralization. Batolite, azinite, alvaite, and cuspidine are only observed here. On the other hand, ullmanite is formed exclusively in the older metamorphic schists of western Sikhote-Alin, and south-western Primor. The younger intrusives are accompanied by skarns with Mn-enriched hedenbergite. The metamorphism of the older intrusives bears the features of deeper levels than that of the younger group. The regional distribution of the acidic and basic intrusive rocks of the Sikhote-Alin is anomalous in as much the ratio of these areas is about 1:1, while generally in the realm of the U.S.S.R. it is 1:5. The Tertiary and Quaternary extinguished volcanism of the Far East has the character of central effusions, but many of them are arranged in one line with some Manchurian volcanoes. A great analogy exists, too, with the volcanism of Kamtchatka, and of the Kuril Isls. The chem. and mineralogical character of these lavas shows a typical transition from monoclinic pyroxene-amphibole phenocrysts, to those of biotite, from labradorite to andesine, and andesine-oligoclase, with quartz and K-Na feldspar only in the youngest effusives, i.e. the general trend to a "re-juvenation" is evident. The analogy extends even to the corresponding effusives of western U.S.A. Hydrothermal-metasomatic changes of the effusives brought about some ore and nonore mineralizations, among which indialite is very remarkable.

W. Eitel

C. A.

Acidic effusives, and ignimbrites from the S Sikhote-Alin', petrochemical characters S. P. Solov'ev. *Izvest. Akad. Nauk S.S.S.R., Ser. Geol.* 1950, No. 5, 79, 211-22(1950). —The huge area of Sikhote-Alin' which is occupied by several 100-m.-thick beds of effusives and pyroclastic tuffs (ignimbrites) includes quartziferous felsophyres, marginal mica liparite porphyrites, granophyres, vitrophyres, perlites, krypto-liparites, felsophyres (quartz-latites), dacites and dacite porphyrites, and partly altered porphyrites as the type rocks. Post-magmatic hydrothermal metasomatic products and occasional more basic dikes are localized. The geol. problem of the differentiation of the older (porphyritic) to the young (acidic) rock types is very complex; the indications speak more for a discontinuous than for regular gradual transitions of the rock character. The absence of quartz and K-Na-feldspars in the lower older types, and the remarkable enrichment of the Ca content in the plagioclase of the upper effusive rocks, are, however, important indications, which speak for an effusion not from one or a few centers, but from a greater no. of volcanic fissures. Analytical material (6 new analyses of type rocks are given) is compared with a series of type analyses of the Far East, and Cascade Prov. Characteristic for the Sikhote-Alin' acidic liparitic magma is the sum with Al_2O_3, the difference between Al_2O_3 and the sum of the alkalies is considerably higher than CaO. The MgO is also low.

W. Feitknecht



SOLOV'YEV, S. P.

The Committee on Stalin Prizes (of the Council of Ministers USSR) in the fields of science and inventions announces that the following scientific works, popular scientific books, and textbooks have been submitted for competition for Stalin Prizes for the years 1952 and 1953. (Sovetskaya Kultura, Moscow, No. 22-40, 20 Feb - 3 Apr 1954)

Name	Title of Work	Nominated by
Solov'yev, S.P.	"Distribution of Magmatic Rocks in the USSR and Certain Problems of Petrology"	Leningrad Mining Institute

SO: W-30604, 7 July 1954

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[illegible]

Acc[illegible] [illegible] activity of the All-Union Min[illegible]ional Science in [illegible]. Zap. vses. mir. ot. 21 nr. 1 (1[illegible])

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[illegible] in the Accession, Library of Congress, December 1953. Unclassified

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Problem of succession in the formation of minerals in skarns. (In: Akademiia nauk SSSR. Voprosy petrografii i mineralogii. Moskva, 1953. Vol. 1, p.206-214) (MLRA 7:4)
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(Gerasimov, Aleksandr Pavlovich, 1869-1942)

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